

MIKANIA (COMPOSITAE) OF THE UNITED STATES

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ABSTRACT

The very large, mainly tropical American genus *Mikania* is represented in the United States by three species, none of which are endemic. These include *M. scandens* of much of the eastern United States, *M. batataefolia* of southern peninsular Florida, and *M. cordifolia* of Florida, Mississippi, and Louisiana.

Mikania (Compositae-Eupatorieae) is primarily a tropical American genus of perennial twiners with nearly 400 known species. The genus is poorly represented in temperate North America. There has never been a comprehensive taxonomic treatment of the three species known to occur in the United States. Numerous floristic works, such as Fernald (1950), Radford et al (1968), Steyermark (1963), Correll and Johnston (1970), etc. include one species, *M. scandens*, for limited areas. Several works treat all known United States species of the genus. These include Small's (1933) account in his *Flora of the Southeast United States*, now outdated in view of increased botanical activity during the past 50 years. Long and Lakela (1971) include all United States species in their work, but only for "tropical" Florida. Cronquist (1980) presents an account of the genus that differs somewhat from that presented here. The present paper is intended to provide a taxonomic treatment of the three species of *Mikania* in the United States. It is part of a continuing effort to produce a monograph of the entire genus.

This treatment is based upon examination of over 10,000 herbarium specimens of United States species and of closely related species from throughout the world. Examination of foreign collections was necessary to obtain a better perspective on the morphological variation within the genus and to compare the United States species with the same and similar species from both the Old and New Worlds. The author is grateful to the curators of the following herbaria for their loan of material: BM, BR, F, FLAS, FSU, IBE, K, L, LAF, MICH, MISS, MISSA, MO, NATC, NO, NLU, NY, P, PH, RB, SMU, TEX (including LL), UC, US, VDB, and WIS. In the following treatment, synonymy for the genus and for *M. cordifolia* is in an abbreviated form and includes only the names that have been used for the United States plants. Extensive synonymy is available in Holmes and McDaniel (1981). The generic description applies only to the three species treated in this work.

MIKANIA Willd., Sp. Pl. 3: 1742. 1803.

Willoughbya Neck. ex. Kuntze, Rev. Gen. Pl. 371. 1891.

Willughbaeya Neck., Elem. 1: 82. 1790, *nom. nud.*

Herbaceous to semi-woody twining perennials; stems terete to hexagonal. Leaves opposite, petiolate, simple, entire or toothed, palmately nerved. Capitulescence a simple or compound corymb. Heads homogamous, four flowered. Phyllaries four, equal, linear-lanceolate to narrowly ovate, subtended by a bracteole; receptacle small, naked, glabrous. Corolla white or pinkish to purple tinted, tubular, the tube slender, the throat gradually or suddenly enlarged; teeth of the limb five, equal, deltoid to triangular, shorter than the throat, but exceeding the throat in *Mikania cordifolia*. Anthers basally rounded, the terminal appendage ovate or oblong. Style branches elongated, filiform. Achenes pentagonal, prismatic or tapering downward. Pappus bristles capillary, numerous, free, uniseriate, the margins scabrid, white or pinkish to purple.

TYPE SPECIES: *Mikania scandens* (L.) Willd. (*Eupatorium scandens* L.). Name and type conserved.

KEY TO SPECIES

1. Heads 7–10 mm long; phyllaries 6–8 mm long; corolla teeth slightly longer than the length of the throat; achenes 3–4 mm long; stems prominently hexagonal *M. cordifolia*
1. Heads 4–7 mm long; phyllaries 3–6 mm long; corolla teeth ca one-half the length of the throat; achenes 1.5–2.2 mm long; stems terete to obscurely hexagonal 2
 2. Phyllaries linear-lanceolate, 5–6 mm long; corolla, phyllaries, and pappus usually pinkish to purplish; corolla 3.5–4 mm long; leaves membranous, the apices long tapering *M. scandens*
 2. Phyllaries lanceolate to narrowly ovate, 3–4 mm long; corolla white, phyllaries green, pappus bristles white; corolla ca 3 mm long; leaves subcoriaceous to somewhat fleshy, the apices acute to acuminate *M. batataefolia*

MIKANIA BATATAEFOLIA DC., Prodr. 5: 197. 1836.

Mikania tamoides DC., 1. c.

Willughbaeya heterophylla Small, Fl. Southeastern U. S. 1170. 1903.

Stems somewhat hexagonal to quadrangular to slightly winged, often densely glandular, glabrous to puberulent; internodes 3.5–13 cm long. Leaves deltoid-ovate, 1.5–6 cm long, 1–5 cm wide, subcoriaceous to somewhat fleshy, 3–5 nerved from the base, the veinlets obscure; margins conspicuously and usually hastately toothed to somewhat lobed to repand, the lobes few, wide, divergent; apices acute to acuminate; bases cordate to subcordate; surfaces mostly glabrous, glandular; petiole 1–4 cm long, glabrous, glandular. Capitulescence a corymb, 2–4 cm long, 2–6 cm in diameter, borne on long peduncles; branchlets angular, glabrous to puberulent; pedicels 1–4 mm long, angular, glabrous to puberulent. Heads 4–5 mm long; bracteole linear, ca 2.5 mm long, puberulent, apex acute to acuminate. Phyllaries lanceolate to

narrowly ovate, 3–4 mm long, puberulent; apices rounded to acute to acuminate. Corollas ca 3 mm long, white, glandular; tube ca 1.5 mm long; throat 1–1.1 mm long; teeth deltoid, ca 0.4 mm long. Achenes 1.5–2 mm long; densely glandular, brown. Pappus bristles ca 40, white, ca 3 mm long. Chromosome number unknown. (Fig. 1).

Woodlands, savannahs, salt marshes, swamps, usually in coral soil or oolite; flowering all year; southern peninsular Florida, the Bahamas, and Cuba (Fig. 2).

TYPE: CUBA *A. de la Ossa s.n.* (G-DC, not seen).

There has been some confusion as to the correct status of *Mikania batataefolia*. Small (1933), Robinson (1934), and Long and Lakela (1963) recognized this species in their respective works. However, Alain (1963) referred *M. batataefolia* to *M. micrantha* HBK., a very common and widespread plant of the wet American tropics. Cronquist (1980) merges *M. batataefolia* with *M. scandens*. I believe the plant is amply distinct, especially when examined in extensive series over its entire distribution area, and that it should not be merged with either *M. scandens* or *M. micrantha*. It lacks the pink to purplish coloration of the corolla, phyllaries, and pappus bristles, large capitulescence, and long tapering apices of the phyllaries and leaves of *M. scandens*. The heads of *M. batataefolia* are consistently shorter than those of *M. scandens*. Although similar in head size and characters of the phyllaries to *M. micrantha*, it lacks the large open capitulescence and thin, ovate, non-glandular leaves of that species.

Chemical evidence also supports the distinctiveness of *Mikania batataefolia*. Herz et al (1970) isolated five germacranolides from *M. scandens*: (1) mikanolide, (2) desoxymikanolide, (3) dihydromikanolide, (4) miscandenin, and (5) scandenolide. Only 1 and 3 are found in *M. batataefolia* (Herz et al, 1969). The flavone batatifolin was also reported in *M. batataefolia* by Herz et al (1969). This flavone is not known from *M. scandens*.

MIKANIA CORDIFOLIA (L. f.) Willd., Sp. Pl. 3: 1746. 1803.

Cacalia cordifolia L. f., Suppl. Pl. 351. 1781.

Willoughbya cordifolia (Willd.) Kuntze, Rev. Gen. Pl. 372. 1891.

Willughbaeya halei Small, Fl. S. E. U. S. 1170. 1903.

Stems hexagonal, gray-tomentulose to tomentose; internodes 5–20 cm long. Leaves ovate to deltate, 5–10 cm long, 3–8 cm wide, 3–5(7) nerved from the base; margins subentire to undulate-dentate; apices acute to acuminate; bases cordate with a wide and open sinus; surfaces densely pilose to tomentose, pale green; petioles 2–5.5 cm long, slightly winged, densely pilose to tomentose; opposite petioles connected by a transverse ridge possessing small, lacinate, stipule-like appendages. Capitulescence a compound corymb, terminal and lateral, to 6 cm or more long and 7 cm or more wide; branchlets hexagonal, densely pilose to tomentose; pedicels 0.5–3

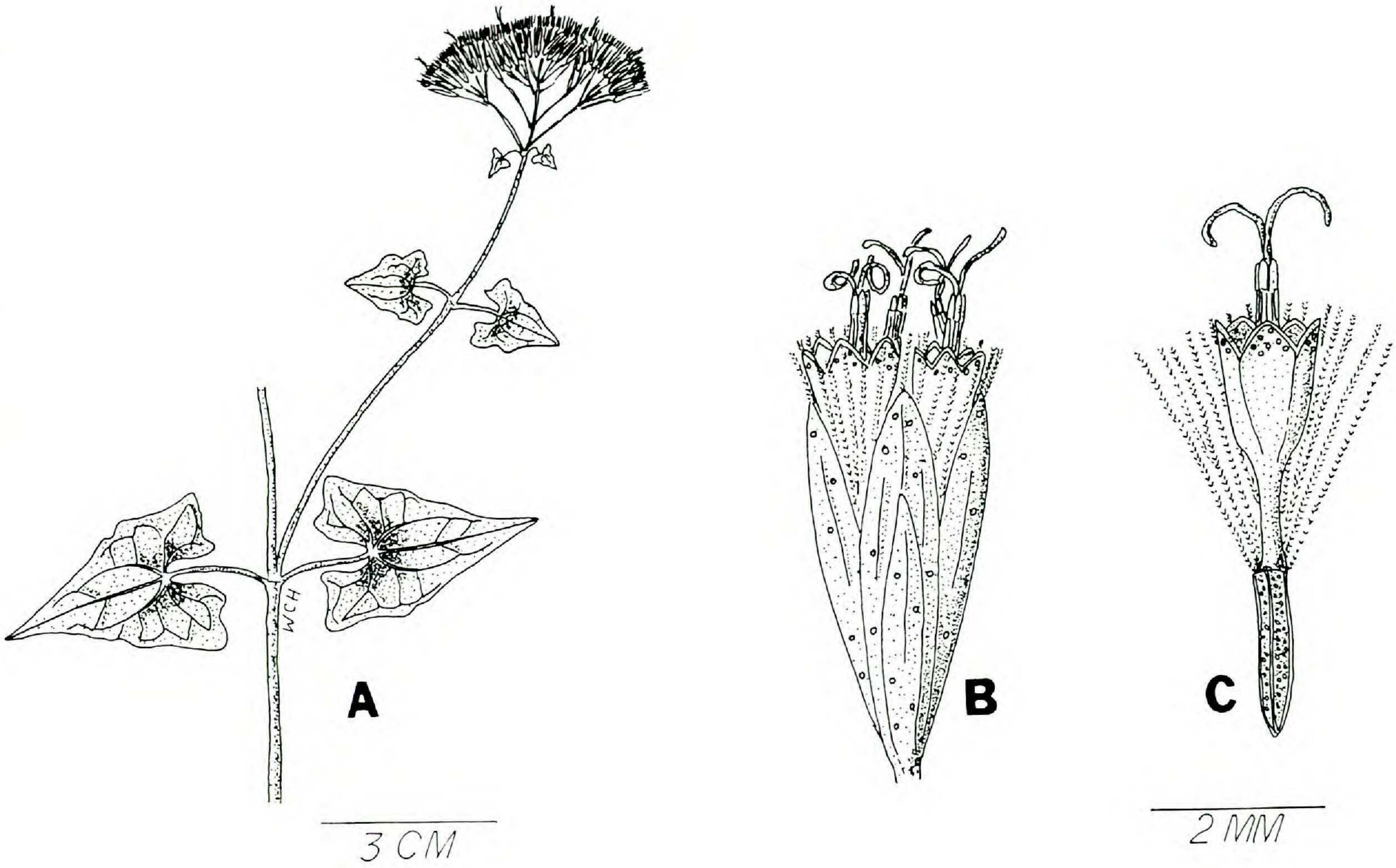


Fig. 1. *Mikania batataefolia* DC. A. Habit, B. Head, C. Flower [after McDaniel & Brennan 9094 (NATC)]¹.



Fig. 2. Documented distribution of *Mikania batataefolia* in southern Florida, Cuba, and the Bahamas.

mm long, hexagonal, pilose to tomentose. Heads 7–10 mm long; bracteole linear to narrowly lanceolate, 4–5 mm long, densely pilose, apex acuminate. Phyllaries elliptic to narrowly ovate, 6–8 mm long, sub-stramineous, apices acute to slightly rounded. Corollas 5–5.5 mm long, white; tube 1.5–2 mm long; throat 1–1.3 mm long; teeth linear, slightly exceeding the length of the throat, recurved when dried. Achenes 3–4 mm long, glabrous to pubescent, lightly glandular, brown. Pappus bristles white ca 60, 5–6 mm long, gradually thinning toward the apices. Chromosome number: $n = 18$, ca 19 (Powell & King, 1969); $2n = 38$ (Gaisner, 1954). (Fig. 3).

Wet areas and woodlands, frequently in calcareous soils; flowering September to December; all of wet-tropical and warm-temperate America from northern Argentina to the Gulf Coastal Plain of the United States (Fig. 4).

TYPE: COLUMBIA, *Mutis 1818* (HOLOTYPE: not seen; ISOTYPE: US!).

Mikania cordifolia is one of the best known and most widespread species of the genus. The species has long been known from southern Florida, but is noticeably absent from Small's (1903) treatment under the synonym *Willughbaeya*. In the same work, the species referred to as *W. halei* Small appears to be *Mikania cordifolia*. The brief description calls for a species with heads slightly larger than *W. scandens* (= *M. scandens*) and occurring in Louisiana. A possible type is *Hale s.n.* (GH!), collected in 1845, the exact location in Louisiana unspecified.

The distribution of *Mikania cordifolia* in the United States appears to be somewhat disjunct (Fig. 4). The species occurs farther inland than previously recorded and its known distribution suggests that it should also occur in western Florida, southern Alabama, and possibly southern Georgia. Coulter (1892) included *M. cordifolia* in his *Botany of West Texas*, giving its distribution as "from western Louisiana into Mexico," but no specimens from Texas have been located. When its distribution in Louisiana is considered [in one instance scarcely five miles from the Texas border in De Soto Parish (*Thomas 68387 et al* (NLU!))], it certainly is to be expected in eastern Texas.

Of interest are three specimens of *Mikania cordifolia* collected in New Jersey in 1875: *Smith s.n.*, *Buck s.n.*, and *Buck & Eckfeldt s.n.* (all PH!). All are in the flowering state and appear normal in all respects. These appear to have been introduced from seeds present in ballast in the Navy Ballast Yard at Kargins Point. Apparently the species was not persistent in New Jersey since no further records are known to exist.

MIKANIA SCANDENS (L.) Willd., Sp. Pl. 3: 1743. 1803.

Eupatorium scandens L., Sp. Pl. 2: 836. 1753.

Mikania pubescens Muhl., Cat. Pl. Am. Sept. 71. 1813.

M. menisperma DC., Prodr. 5: 200. 1836.

M. scandens (L.) Willd. var. *pubescens* (Muhl.) T. & G., Fl. N. Am. 2. 91. 1843.

Willoughbya scandens (Willd.) Kuntze, Rev. Gen. 372. 1891.

Willughbaeya scandens (L.) Kuntze, of Small, FL. S. E. U. S. 1170. 1903.

Stems obscurely hexagonal to terete, nearly glabrous to densely pilose; nodes provided with narrow, lacinate, stipule-like enations; internodes 8–15 cm long. Leaves triangular to triangular-ovate, 3–15 cm long, 2–11 cm wide, 3–5 nerved from the bases; margins subentire to undulate, crenate or coarsely

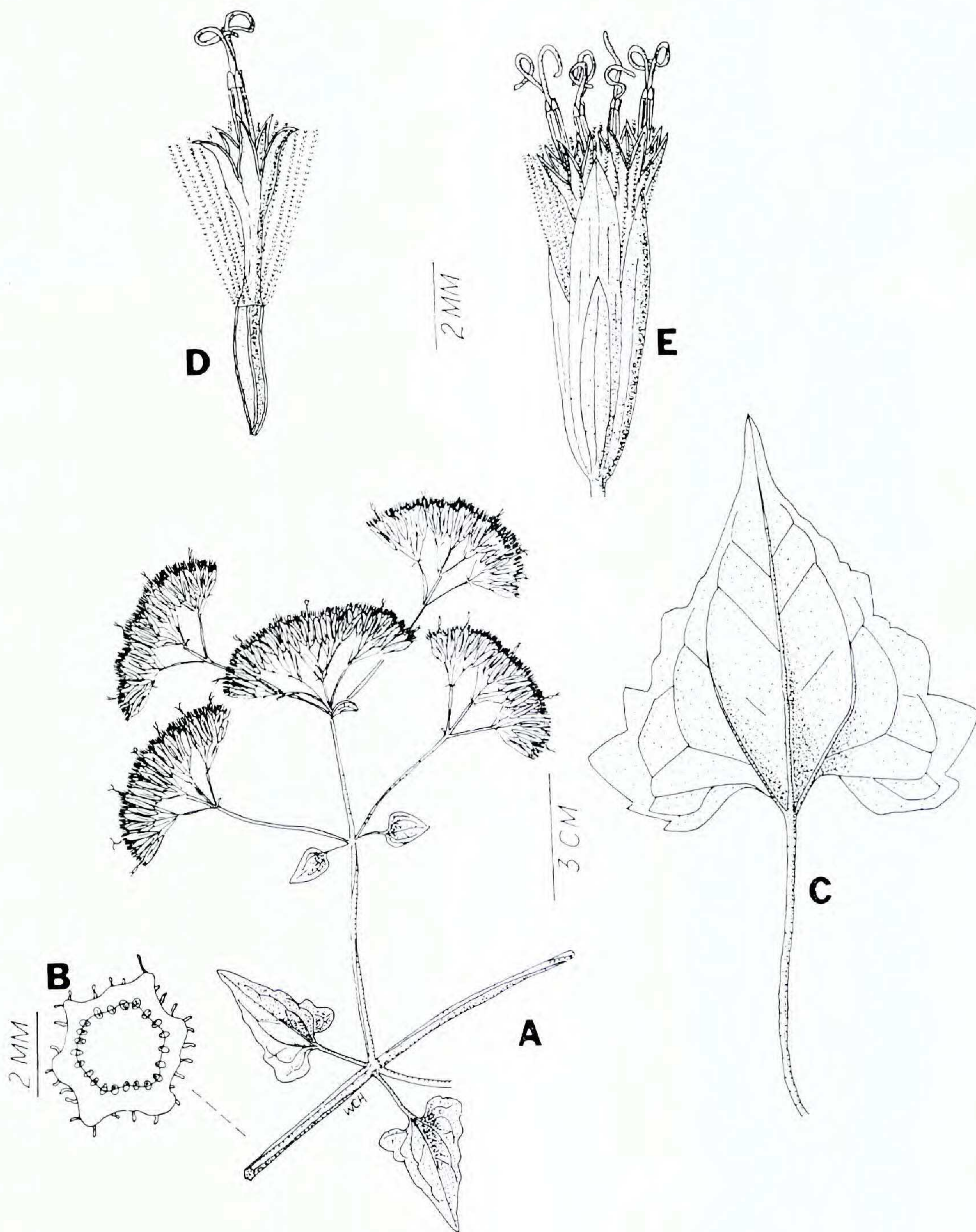


Fig. 3. *Mikania cordifolia* (L. f.) Willd. A. Habit, B. X-section of stem, C. Leaf, D. Flower, E. Head [after Reese 6804 (LAF)].

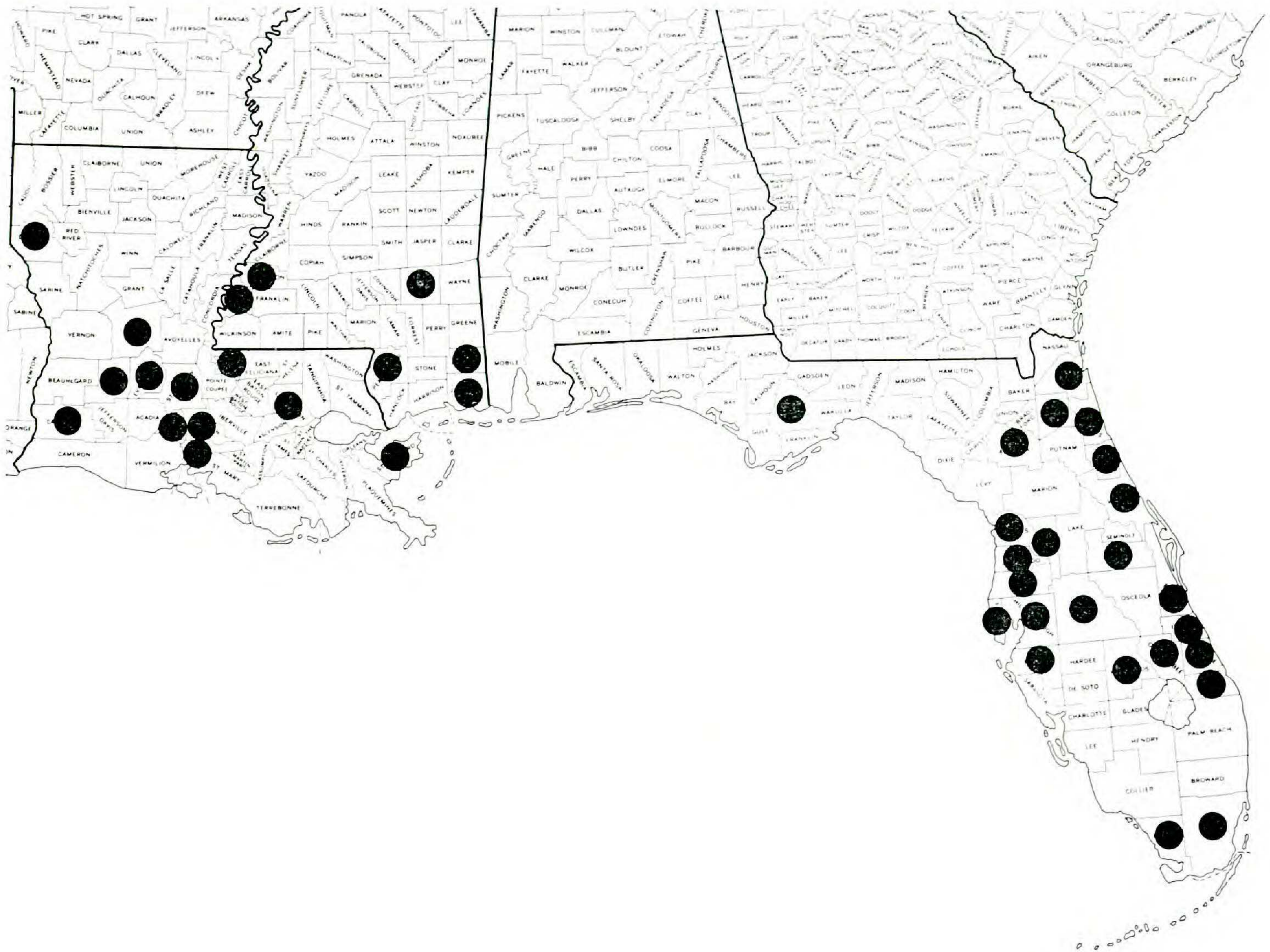


Fig. 4. Documented distribution of *Mikania cordifolia* in southeastern United States.

dentate; apices attenuate, often ending in a caudate tip; bases cordate to hastate, the sinuses wide; surfaces glabrous to puberulent; petioles 2–5 cm long, thin, glabrous to puberulent. Capitulescence a round-topped, rather dense corymb, 2–5 cm long, 2–8 cm in diameter; branchlets angular, obscurely ribbed, glabrous to puberulent; pedicels 2–5 mm long, glabrate to puberulent. Heads 6–7 mm long; bracteole linear to lanceolate, 3–4 mm long, glabrous to puberulent, apex attenuate. Phyllaries linear-lanceolate, 5–6 mm long, glabrous to puberulent, green to pinkish to purplish, apices attenuate. Corollas 3.5–4 mm long, white to more often pinkish to purplish, lightly glandular; tube 1.5–2 mm long, throat campanulate to salverform, 1.3–1.5 mm long, teeth triangular to deltoid, 0.5–0.7 mm long. Achenes 1.8–2.2 mm long, densely glandular, dark brown to blackish, the angles smooth. Pappus bristles 30–37, white to pinkish to purplish, 4–4.5 mm long. Chromosome number: $2n = 38$ (Gaisner, 1954). (Fig. 5).

Wet, mostly open areas; flowering July to December; Atlantic and Gulf coastal plain from Texas to southern Massachusetts, interior along the Mississippi embayment to Missouri and Illinois; also local in the interior in New York and Indiana; rarely in the Bahamas (New Providence) and northern Mexico (Matamoros) (Fig. 6).

Prior to the work of Robinson (1934), *Mikania scandens* was considered a highly polymorphic species of pantropical and temperate American distribution. Robinson largely confined this species to the United States, referring the Old World and tropical material to commonly unused names. Occasionally the name is still used to refer to some of the Old World species, such as in Humbert (1960). Persistent misapplication of the name *M. scandens* to refer to the Old World *Mikania* has caused an incorrect chromosome number of $n = 18$ to be reported for the species. Mangenot and Mangenot's (1957) count of *M. scandens* from Africa could be any of several species. Baquar (1967-68) also reported this number for *M. scandens* of East Pakistan. This count probably applies to *M. micrantha* HBK., a species widely introduced in that part of the world.

A modern treatment of the *Mikania scandens* complex is presented in Holmes (1975).

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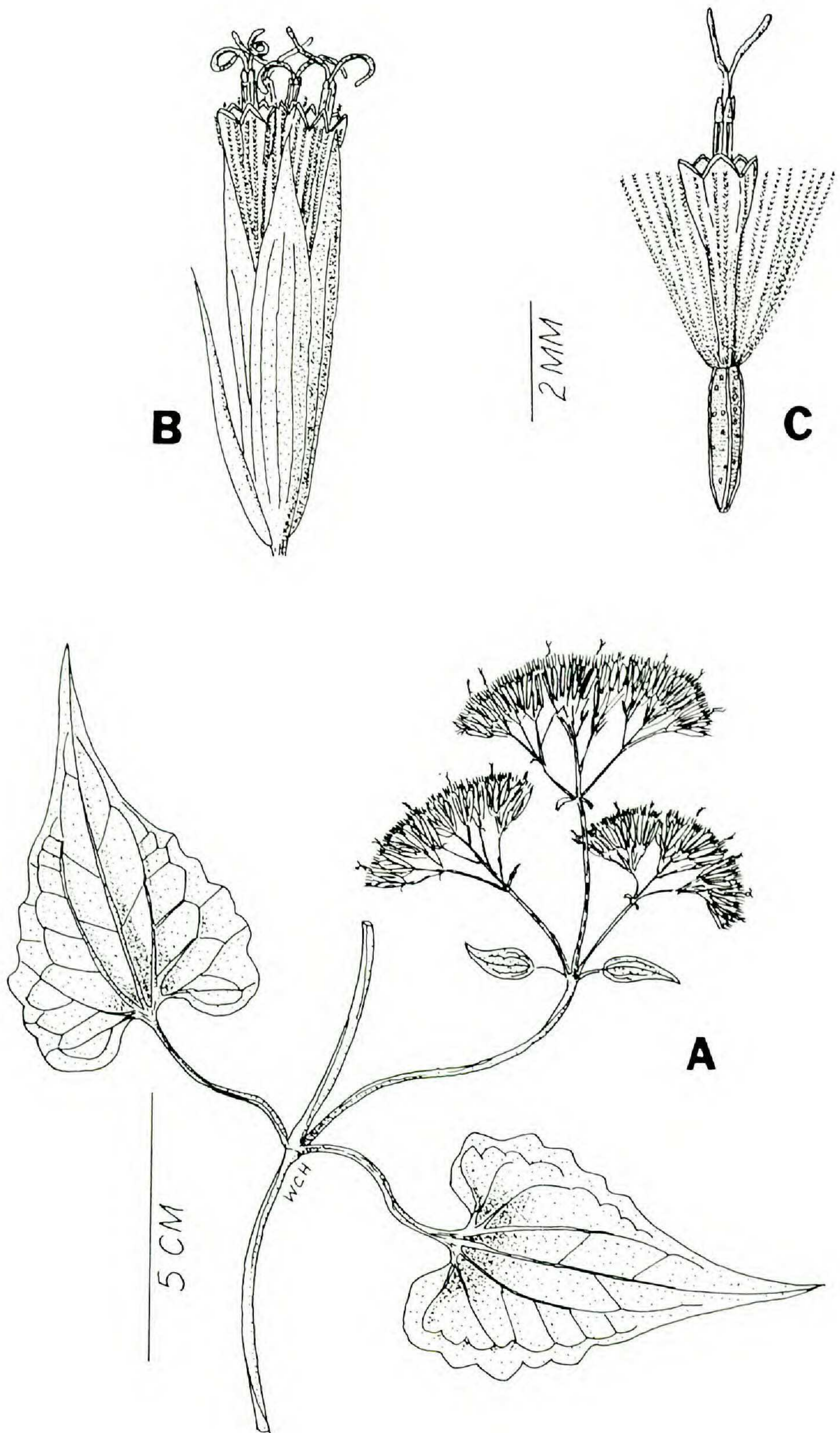


Fig. 5. *Mikania scandens* (L.) Willd. A. Habit, B. Head, C. Flower [after *Holmes* 2841 (NATC)].

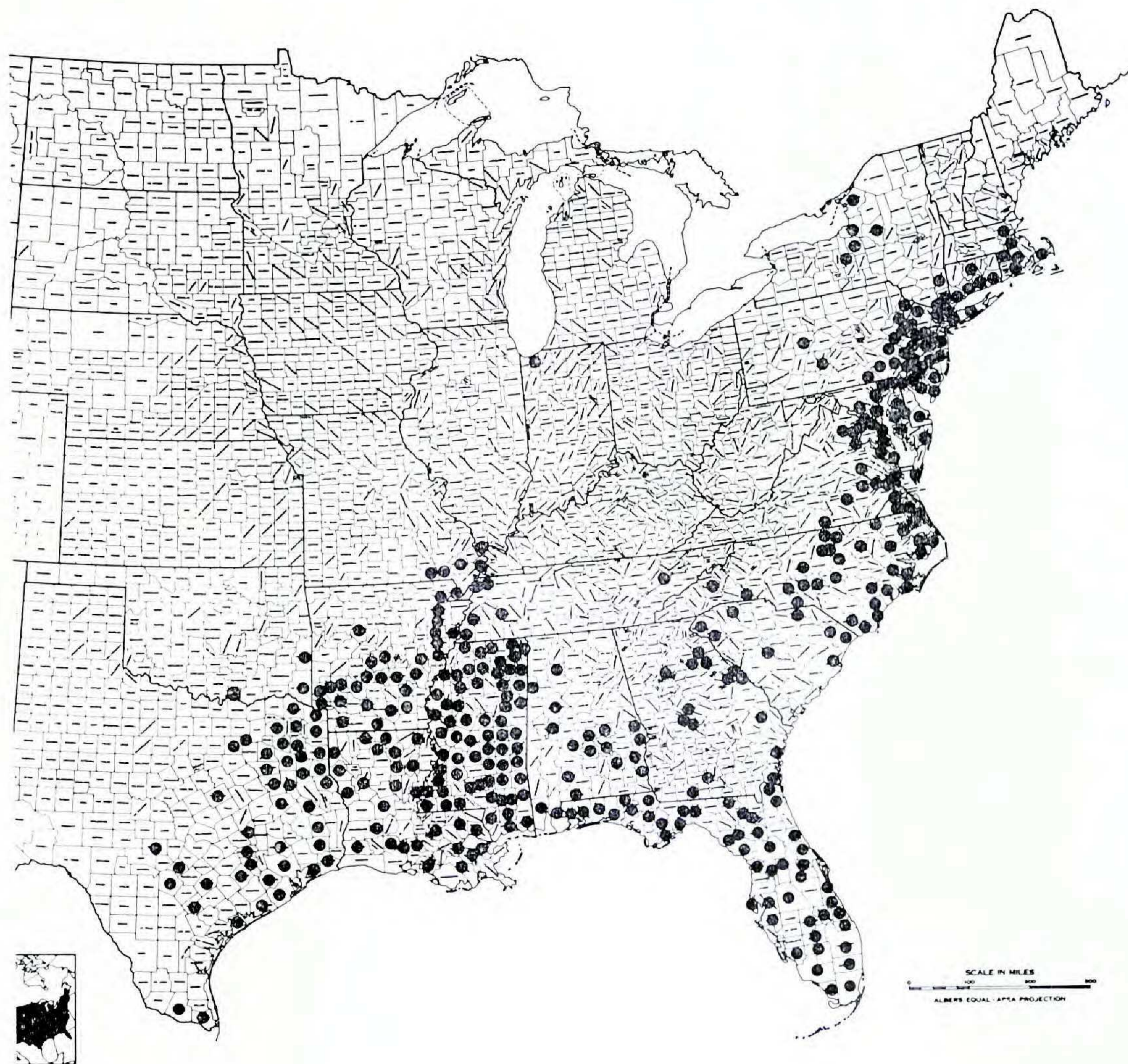


Fig. 6. Documented distribution of *Mikania scandens* in eastern United States.

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